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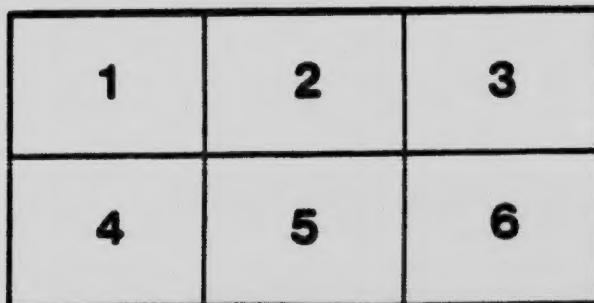
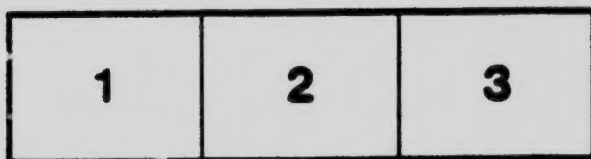
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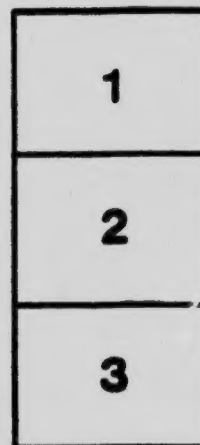
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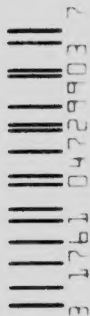
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DOUBLE STAR MEASURES

BY

R. M. MOTHERWELL, M.A.

DOUBLE STAR MEASURES

BY R. M. MOTHERWELL

THE measurement of double stars was begun at this Observatory in the summer of 1907. Three half nights a week are devoted to this work but considerable encroachment is made on this time by the photographing and measurement of comets. The 15-inch Equatorial is equipped with a Warner and Swasey filar micrometer, the red illumination being invariably used. The longitudinal wire broke shortly after the beginning of the work and at present there are only two wires, one fixed and one movable, no others being required. A programme has been arranged from Burnham's *General Catalogue of Double Stars*, the aim being to measure only neglected pairs or those whose motion seems uncertain. I am much indebted to Professor Burnham for severable valuable suggestions in connection with the work.

I wish also to express my indebtedness to Dr. King and Mr. Plaskett for the assistance and encouragement they have given me in the carrying out of this programme.

Number	Epoch	Position Angle	Distance	Number	Epoch	Position Angle	Distance
		$^{\circ}$	$''$			$^{\circ}$	$''$
70	1907·814	224·3	17·75	758	1907·790	A B 100·1	2·15
	1910·690	224·1	17·32		1907·790	C D 130·2	4·85
Mean	1909·252	224·2	17·53	1002	1907·814	162·8	5·88
151	1908·786	279·0	1·34	1223	1909·914	288·2	4·71
					1910·701	290·9	5·02
269	1908·765	114·0	5·78		1910·745	291·3	4·79
	1910·701	114·7	5·91	Mean	1910·453	290·1	4·84
	1910·745	113·6	5·60				
Mean	1910·070	114·1	5·79	1239	1910·701	261·2	34·02
319	1907·920	11·0	61·07	1427	1907·812	315·7	3·07
					1908·921	313·9	3·28
710	1907·920	190·2	30·20	Mean	1908·366	314·8	3·18

Number	Epoch	Position Angle	Distance	Number	Epoch	Position Angle	Distance
		°	"			°	"
1655	1900.768	228.7	6.71	5319	1908.304	176.9	2.50
1750	1907.920	248.3	17.04		1908.426	177.3	2.78
	1908.020	249.1	17.24	Mean	1908.365	177.1	2.64
Mean	1908.420	248.7	17.14	5337	1908.304	293.5	30.09
2040	1907.920	222.6	3.95		1908.426	294.2	29.38
	1908.921	218.8	4.21		1908.977	295.2	30.78
	1910.067	220.7	4.12		1909.183	294.4	31.50
Mean	1908.969	220.7	4.09		1909.202	294.8	31.89
2043	1907.812	323.7	4.03	Mean	1909.399	294.3	31.09
	1910.067	321.8	4.62		1908.915	294.4	30.79
Mean	1908.939	322.7	4.32	5388	1908.247	117.4	3.88
2536	1908.996	305.3	2.73		1909.183	114.1	3.89
	1910.067	299.7	2.85	Mean	1909.399	116.4	3.82
Mean	1909.531	302.5	2.79		1908.943	116.0	3.86
2544	1909.796	27.2	11.89	5426	1908.247	68.6	3.05
3334	1910.067	325.2	10.82		1909.303	68.1	3.50
3348	1910.067	162.7	6.88	Mean	1909.399	66.5	3.27
4452	1909.341	43.27	2.60		1908.983	67.7	3.27
4491	1910.092	300.4	19.26	5705	1909.303	32.2	3.37
4530	1909.086	139.6	6.12	5809	1908.977	27.6	24.86
4890	1908.247	196.9	5.14		1909.078	28.0	25.17
	1909.086	196.7	4.88		1909.202	27.6	24.89
	1909.303	197.0	5.11	Mean	1909.303	28.3	25.33
Mean	1908.879	196.9	5.04		1909.140	27.9	25.06
5011	1908.247	45.5	1.88	5892	1910.092	57.5	31.44
5014	1909.202	235.9	3.50		1910.112	57.6	30.72
	1909.303	234.0	3.39	Mean	1910.188	57.7	31.00
	1909.341	235.5	3.40		1910.131	57.6	31.05
Mean	1909.282	235.1	3.43	6030	1908.426	308.1	2.80
5019	1910.279	302.0	24.99	Mean	1910.284	309.5	2.63
5125	1908.304	146.5	3.43		1909.355	308.8	2.72
	1910.279	146.1	3.56	6033	1908.426	108.8	6.28
Mean	1909.291	146.3	3.50		1909.078	107.8	5.72
5302	1909.202	293.9	6.08		1909.202	106.8	6.06
					1909.303	106.8	6.57
					1909.437	106.4	Clouds
					1910.188	105.8	6.58
				Mean	1909.272	107.1	6.24
				6035	1909.078	178.8	16.32
					1909.086	181.7	16.10
					1909.183	179.3	16.50
					1909.399	179.4	16.41
				Mean	1909.187	179.8	16.33

Double Star Measures

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Distance	Number	Epoch	Position Angle	Distance	Number	Epoch	Position Angle	Distance
2'50	6311	1908'371	359'4	1'88	7450	1908'575	15'2	8'70
2'78		1908'426	359'2	2'60		1908'617	14'3	9'20
2'64		1910'188	0'3	2'17		1908'631	14'0	9'50
30'09	Mean	1908'995	359'6	2'22		1909'412	14'9	8'92
29'38	6386	1909'360	119'0	2'90		1909'429	13'9	9'18
30'78		1909'404	118'1	3'11		1909'437	14'1	9'48
31'50		1910'284	118'7	Clouds	Mean	1909'017	14'4	9'10
31'89	Mean	1909'713	118'6	3'05	7451	1908'317	255'4	16'64
31'09	6390	1910'188	2'6	7'32		1908'404	254'4	17'11
30'79		1909'437	345'4	1'85		1908'575	254'8	16'57
3'88		1909'494	344'4	2'21		1908'617	256'0	16'17
3'89	6415	1910'306	343'7	1'89		1908'631	254'6	16'65
3'82		1909'746	344'5	1'98	Mean	1908'521	255'0	16'63
3'86		1909'437	229'6	3'22	7458	1908'575	288'9	1'44
3'05	6599	1909'494	230'7	3'45	7480	1909'634	77'2	3'97
3'50		1910'216	230'2	3'39		1910'381	79'9	84'55
3'27		1910'254	229'6	3'64		1910'009	77'1	84'20
3'27	Mean	1909'850	230'0	3'43	Mean	1908'617	81'6	2'71
3'37	6614	1910'188	161'8	4'31		1908'746	78'2	2'87
24'86		1910'207	159'9	4'15		1908'765	79'4	2'70
25'17		1910'153	160'9	4'23		1909'429	78'2	3'00
24'89	Mean	1910'092	213'0	61'74	Mean	1908'889	79'4	2'82
25'33	6753	1910'207	212'9	64'82	8384	1908'617	82'0	1'50
25'06		1910'480	213'4	63'36		1909'631	79'8	1'60
31'44		1910'203	213'1	63'31		1909'124	80'9	1'55
30'72	Mean	1909'494	349'8	1'52	Mean	1908'631	338'4	27'15
31'00	7065	1909'494	115'9	4'60		1908'641	338'7	27'47
31'05		1910'306	115'5	4'56		1908'765	339'3	26'90
2'80		1910'480	114'4	4'62	Mean	1908'679	338'8	27'17
2'63	Mean	1910'096	115'3	4'59	8431	1910'681	136'0	53'82
2'72	7117	1908'217	305'8	1'88		1910'706	136'1	53'72
6'28		1908'309	301'1	1'72		1910'694	136'1	53'77
5'72		1908'263	303'5	1'80	Mean	1910'681	62'4	Clouds
6'06	7318	1908'217	184'5	3'90	8432	1910'706	62'3	24'50
6'57		1908'317	184'3	3'81		1910'694	62'4	24'50
Clouds		1909'494	184'3	3'60	Mean	1910'706	70'2	39'43
6'58	Mean	1908'676	184'4	3'77	8481	1910'706	237'5	5'25
6'24	7429 5	1909'429	252'9	9'39		1908'541	51'9	7'84
16'32		1909'494	252'9	9'26		1908'581	50'5	8'50
16'10		1909'634	254'3	9'46	9034	1909'631	50'2	8'11
16'50		1910'216	253'2	9'08		1909'763	51'3	8'46
16'41		1910'254	253'4	9'57	Mean	1909'129	51'0	8'23
16'33	Mean	1909'805	253'3	9'35				

Number	Epoch	Position Angle	Distance	Number	Epoch	Position Angle	Distance
		°	"			°	"
9037	1908-541	7-4	5-90	9970	1909-686	297-6	8-95
	1908-581	7-3	5-88		1909-763	298-5	8-86
	1908-641	7-2	5-68		1910-534	298-5	8-71
	1908-765	7-1	5-90		1910-627	298-1	8-92
Mean	1908-632	7-3	5-84	Mean	1910-638	297-6	8-83
9107					1910-250	298-1	8-85
	1910-638	229-9	59-54	9977	1908-641	170-1	4-30
	1910-660	229-8	59-47		1908-765	171-0	3-84
Mean	1910-649	229-9	59-51		1908-786	171-8	3-50
9167				Mean	1808-731	171-0	3-88
	1908-541	154-8	0-84	9980	1909-763	277-1	4-41
	1908-613	154-5	0-89		1909-782	134-1	6-39
Mean	1908-577	154-7	0-87		1910-580	132-5	5-79
9181				Mean	1910-181	133-3	6-09
	1910-638	104-8	6-78	10005	1910-627	151-5	23-28
	1910-706	103-1	7-10		1910-638	151-4	23-07
Mean	1910-672	104-0	6-94		1910-668	151-4	23-56
9183				Mean	1910-644	151-4	23-30
	1910-651	102-5	36-13	10061	1908-765	185-3	7-18
	1910-660	102-3	36-45		1910-627	297-5	49-75
	1910-668	102-4	36-53		1910-638	297-4	49-79
Mean	1910-660	102-4	36-37		1910-668	297-4	49-60
N.D. 63"	1501 and 1502:			Mean	1910-644	297-4	49-71
	1910-668	156-4	78-66	10066	1910-690	AD 256-8	32-18
					1910-690	AE 75-8	36-38
N.D. 63"	1505 and 1506:			10072	1907-576	215-0	0-73
	1910-638	103-8	24-54		1908-613	212-2	1-30
	1910-660	103-3	24-01		1908-095	213-6	1-02
	1910-668	103-4	24-76	10075	1910-572	48-8	4-31
Mean	1910-655	103-5	24-44		1910-690	49-8	4-51
9604					1910-701	51-5	4-73
	1908-541	9-7	2-81		1910-739	50-3	4-65
	1908-613	10-5	2-75	Mean	1910-676	50-1	4-53
Mean	1908-577	10-1	2-78	10385	1907-710	112-7	3-38
9093					1908-581	111-0	3-51
	1907-530	136-9	3-98		1908-146	111-9	3-45
	1908-492	138-6	4-07	10685	1908-522	164-6	1-89
	1908-522	138-0	3-74				
	1908-581	138-6	4-01				
	1908-613	137-8	3-93				
Mean	1908-348	138-0	3-95				
9905							
	1908-600	271-1	Clouds				
	1909-631	271-7	20-09				
	1910-627	270-8	19-37				
Mean	1909-619	271-2	19-73				

Number	Epoch	Position Angle	Distance	Number	Epoch	Position Angle	Distance		
10709	1907.587	160.2	3.35	10945	1910.627	87.7	44.18		
	1908.522	163.1	3.34		1910.668	89.2	44.31		
	1908.613	158.3	3.39		Mean	1910.648	88.5	44.25	
	Mean	1908.241	160.5	3.30	11021	1910.627	159.7	3.72	
10742	1908.613	349.2	22.90	1910.701		159.5	4.06		
	1908.765	351.5	23.89	1910.739		159.1	3.80		
	1909.686	351.7	23.54	Mean		1910.689	159.4	3.80	
	1909.763	352.5	23.54	11048	1909.782	183.9	4.23		
Mean	1909.207	351.2	23.47		1910.690	184.9	3.93		
	1910.701	185.8	3.92		Mean	1910.391	184.9	4.03	
	10778	1907.543	307.0			3.50	11068	1907.697	320.0
		1908.522	309.3	3.37		11376		1907.697	27.0
1908.541		309.9	3.85	11487				1909.763	47.1
1908.581		307.5	3.71		1910.701			47.0	17.36
1908.786	307.8	3.44	1910.739		46.5		17.14		
1908.805	307.8	3.18	Mean		1910.401	46.9	17.36		
Mean	1908.463	308.1	3.51	11499	1909.763	95.2	19.95		
10838	1907.627	270.0	3.93		1909.782	94.7	20.13		
	10901	1908.613	112.6		5.68	1910.668	94.1	Clouds	
		1908.641	112.0		5.60	1910.690	93.7	18.95	
		1909.782	114.1	5.40	Mean	1910.226	94.4	19.68	
1909.859		112.0	5.76	11501	1909.914	100.0	7.93		
Mean	1909.224	112.9	5.61		1910.745	179.6	11.18		
	10910	1907.576	106.0		1.59	11601	1910.745	22.1	2.56
		10917	1910.580		334.7		13.39	1909.782	358.4
			1910.701	334.3	13.63		1909.914	358.7	33.22
1910.706			336.6	13.72	1910.668		359.2	32.82	
Mean	1910.662		335.2	13.58	Mean	1910.121	358.8	33.16	
10925	1910.660	43.0	4.37	12230	1909.782	358.4	33.44		
	1910.690	45.2	4.38		1909.914	358.7	33.22		
	Mean	1910.675	44.1		4.38	1910.668	359.2	32.82	
		10934	1910.627		246.1	12.91	1910.121	358.8	33.16
1910.660			244.0	12.51	12345	1907.710	87.3	2.37	
1910.668			245.4	12.51		12753	1907.710	161.8	3.12
Mean	1910.652		245.2	12.64			1908.765	160.1	3.09
	1908.238	161.0	3.11						

DOMINION OBSERVATORY,
OTTAWA, CANADA,
October, 1910.